has lessened the amount of hormones necessary to relieve the patient.

In nineteen children treated in the clinic, and in nine adults institutionalized, we have not failed in a single instance to relieve the asthma. The children have almost universally been the type who have considerable bronchitis with bronchiectatic change. However, the asthma has been precipitated again in many cases by colds or other acute infections or overexertion. In no case has the recurrence proved refractory to subsequent treatment. However, the discussion of the prolonged treatment of asthma is outside the scope of this paper, as we are limiting ourselves to the value of these measures in freeing the asthmatic patient from his attacks.

Our experience with the adrenal hormones and salt has been much more limited in other allergic conditions. It seems to be of value in migraine. The cortical hormone combined with epinephrin ointment has been quite effective in controlling eczema. As we mentioned above, it has not been as satisfactory in hay fever as in asthma.

THE EFFECTS OF EPINEPHRIN AND THE CORTICAL HORMONE SHOWN IN FIFTY CASES

The accompanying chart* (Table 1) summarizes the results of our therapy. The patients are segregated as to the type of therapy used, and whether or not the patient was treated institutionally or in the out-patient clinic. In all cases the daily consumption of a large quantity of sodium chlorid was insisted upon.

Of the fifty cases reported,* the results of all but two have been satisfactory. Neither of these patients was able to submit to a program of rest, which is so essential to the relief of their condition, but both patients experienced considerable increase in energy and a feeling of increased well-being, although neither was completely freed of the attacks.

Although we have discussed the result of treatment only from the standpoint of relief from the paroxysm, in summarizing our results we have divided the relief obtained into "moderate improvement" and "marked improvement." Both groups obtained satisfactory relief from the immediate attack, but this classification is determined by our knowledge of their subsequent course. Relief in these instances was obtained in from a few minutes to five days. In speaking of relief we do not mean temporary relief, such as is obtained from a single injection of epinephrin, but a more permanent relief which leaves the patient free from symptoms. In those patients classified under "moderate improvement," recurrence of symptoms has been noted, with colds and exhaustion states, while those showing "marked improvement" have been free for from three months to two years.

SUMMARY

1. Asthma (allergy) is a condition in which all systems of vegetative control of cellular activity—nervous, endocrine, and electrolytic—may be in imbalance.

2. The accidental discovery of the usefulness of cortical extract in the treatment of asthma.

3. Both epinephrin and the cortical hormone are proved to be active when given orally.

4. The effects of epinephrin and cortical hormone in the control of the asthmatic state is illustrated in the treatment of fifty patients.

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* The charts and reports of cases submitted in the manuscript will appear in the reprints.

PUBLIC HEALTH AND MEDICAL COÖRDINATION IN POLIOMYELITIS CONTROL*

WITH REFERENCE TO THE 1934 EPIDEMIC IN LOS ANGELES COUNTY

By J. L. Pomeroy, M.D.
Los Angeles

Discussion *by Alfred James Scott, M.D., Los Angeles; Charles Leroy Lowman, M.D., Los Angeles; R. W. Meals, M.D., Hollywood; John C. Ruddock, M.D., Los Angeles.*

IN reviewing the present situation in regard to poliomyelitis, a word or two concerning past history in this county is necessary. This disease has been recurring at intervals of from three to four years in this area for a considerable period of time. In 1912, in Los Angeles City alone there were 265 paralytic cases, with fifty-three deaths, practically no abortive cases being recognized and reported at that time. A mild outbreak occurred in 1916, which, however, did not assume epidemic proportions. An outbreak of similar proportions occurred again in 1920, with finally a more severe one in 1925.

THE OUTBREAK IN 1930

The most serious outbreak occurred in 1930, with the greatest concentration of cases in the Glendale and Alhambra districts, although the epidemic was widespread. In the outbreak of 1930 there were 342 cases and twenty-four deaths in the county health department territory. This was the first instance where a considerable number of preparalytic cases were reported, and the department furnished convalescent serum. The disease reached its peak during the latter part of July, and tapered off until the cold weather began in November. Some 132 patients were sent to the Los Angeles County General Hospital, and 183 cases were treated in their homes. Cases occurred almost equally in rural districts and in cities. In this outbreak there were eleven families in which there were two cases each, one family in which there were three cases, and in one family, which I particularly wish to mention, there were seven cases and three deaths. There were two cases which suffered a second attack: one had two attacks during the epidemic about three months apart, the other having been definitely stricken in 1927, and having a very definite repetition of the disease in 1930. In all there were twenty-four deaths, twelve of which were of children ranging from one to twelve years of age. Of this group,

* From the Department of Health of the County of Los Angeles.

Read before the Southern California Medical Association meeting Saturday, November 3, 1934.

fourteen were the purely bulbar type, while ten were of the ascending paralysis form with death resulting mainly from paralysis of the muscles of respiration.

GROUPING OF THREE HUNDRED CASES

An interesting tabulation of this outbreak in reference to the use of serum in three hundred cases, which may be divided into three groups of one hundred each, follows:

Group 1. The first group consisted of one hundred preparalytic cases, who received serum; all made complete recovery without paralysis. I must say we had no controls, so you may take this for what it is worth. The fact remains, nevertheless, that one hundred carefully diagnosed cases made 100 per cent recovery, a fact which cannot escape careful consideration. (Sixty per cent of these cases had spinal fluid cell counts, which supported the diagnosis, and all cases received consultation of trained diagnosticians.) Serum averaging 50 cubic centimeters per dose was generally administered intramuscularly, excepting to the extremely toxic, who received it intravenously.

Group 2. The second group of one hundred paralytic cases received serum with the following results: Serum on the first day of paralysis—50 per cent recovery without residual paralysis. Serum on the second day of paralysis—41 per cent recovery without residual paralysis. Serum on the third day of paralysis—22 per cent recovery without residual paralysis. Serum on the fourth and fifth days of paralysis—1 per cent recovery without residual paralysis. Serum was administered in not less than 50 cubic centimeters doses by the intramuscular and intravenous routes, and usually in smaller doses when given intraspinally or intracisternally.

Group 3. The third group of one hundred paralytic cases which received *no* serum resulted in 27 per cent making recovery without paralysis.

Therefore, if 50 per cent of the paralytic group receiving serum on the first day of paralysis made recovery without any residual paralysis, it is reasonable to presume that had the third group of one hundred paralytic cases received the same treatment, there would have been 50 per cent complete recovery instead of 27 per cent, as was the case, thus effecting a saving of 23 per cent.

So we may thus conclude that these data point strongly to the therapeutic value of human convalescent serum in the treatment of poliomyelitis, and certainly that the earlier the serum is administered by the proper method or route, and in unstinted dosage, the greater its therapeutic value.

ORGANIZATION PROBLEMS IN THE 1934 EPIDEMIC

Beginning in the early spring of 1934, our records began to show a slight increase in poliomyelitis. The department repeatedly called attention to this in our weekly bulletin. Early in May a conference was called with all local health officials, and means and measures for combating the outbreak were discussed. Heretofore there have been several obstacles in Los Angeles County to the successful handling of a disease like poliomyelitis. First, in the absence of more definite methods of control measures than at present are at hand, there has been considerable confusion in the public mind because of conflicting programs adopted by the different local health departments. Second, the difficulty of early diagnosis has made reporting by physicians subject to considerable error. Third, in the past rarely over 50 per cent of the cases have been hospitalized, although most authorities agree that the majority of the cases should be thus cared for. Fourth, an adequate follow-up from the standpoint of physiotherapy and orthopedic care is considered a very necessary part of a poliomyelitis control program. Fifth, a thoroughly educated and enlightened public is essential to the success of any poliomyelitis program.

LOS ANGELES COUNTY POLIOMYELITIS BOARD

With these basic fundamentals in mind the county health officer consulted members of the medical profession * and a plan was developed calling for the creation of a group to be known as the Los Angeles County Poliomyelitis Board, which group would bring about correlation and coördination of all local efforts to control poliomyelitis, and to further the coöperation particularly of the general public and the medical profession. It is noteworthy that a similar group had been formed at St. Louis during the outbreak of encephalitis in that section over a year ago. Heretofore, attempts have been made by various agencies to suppress all knowledge concerning the presence of epidemics in this section; various conflicting regulations have been adopted by local health agencies, and there was no one group in existence where joint programs could be worked out and uniformly adopted. During the course of the epidemic the Los Angeles County Poliomyelitis Board met weekly until the second week in August, when it appeared that the outbreak was rapidly waning. Although no special funds of any kind were at the disposal of the Los Angeles County Poliomyelitis Board, and the work of the Board was largely coördination and planning, nevertheless I believe that the results of this effort make the continuation of such an organization a necessity. At the recommendation of the Board, and with the approval of the Los Angeles County Medical Association, I have officially requested the Los Angeles County Board of Supervisors to bring into being a permanent organization with the suggested title of "The Los Angeles County Metropolitan Health Committee"; such committee to function only in times of epidemics or disaster, and to bring into being, as nearly as is possible, complete coördination between the health officials, the medical profession, hospitals, the general public and other agencies.

Just a few words on the work of the Los Angeles County Poliomyelitis Board and the situation in regard to the poliomyelitis epidemic itself. It was decided that the general public would be

* Among those who gave special coöperation were: Dr. John C. Ruddock, chairman of the Public Relations Committee of the County Medical Association; Dr. C. L. Lowman of the Orthopedic Hospital group, Dr. H. D. Eaton, Dr. A. J. Scott, and Dr. R. W. Meals.

taken into our confidence and the situation fully explained, especially in regard to precautionary measures and the stressing of prompt and adequate medical care. One hundred thousand copies of a pamphlet approved by the entire board were printed and distributed through various agencies to the general public. Through the courtesy of members of the medical profession, a series of radio talks was prepared and given over KMTR, KFAC, and other stations. Other avenues of publicity, such as newspapers, circulars, and talks to various clubs, were used. A series of letters was sent out to every practicing physician in the county at the expense of the county health department. Members of the board, as well as representatives from the State Department of Public Health, gave instructions to medical groups, so that the profession was thoroughly aroused to the situation. Copies of a special bulletin provided by the State Department of Public Health were distributed to physicians. A special diagnostic group was organized and free consultation offered throughout the county.

THE SCHOOL PROBLEM

It is notable that, in spite of considerable opposition, it was decided to continue schools with precautionary measures of careful daily inspection of all pupils showing abnormal symptoms of any kind. No theaters or other public places were closed, contrary to previous practice in this regard. Swimming pools were specially regulated and instructions given in regard to the danger of diving or otherwise irritating the nasal mucosa. A special camp ordinance was passed by the Board of Supervisors, which provided for medical inspection of every child before entrance, and for a medical officer to be domiciled at each camp. All camps were placed under a license system and under careful sanitary regulations. It is noteworthy that not a single case of poliomyelitis developed in a summer camp throughout Los Angeles County. It must be recalled that this is the first time in the United States that an epidemic of poliomyelitis has been handled in this manner.

CONVALESCENT SERUM

Through coöperation with the medical staff of the Orthopedic Hospital, arrangements were perfected to supply the medical profession and hospitals with an adequate amount of convalescent serum produced under the most careful laboratory control methods. A total of fifteen gallons of serum was produced by the county health department and the staff of the Orthopedic Hospital, with a saving to the public of nearly $33,000 over prior methods of producing serum. Free serum was made possible to all persons in our territory who required it, including the service at the General Hospital. The necessity for early diagnosis and prompt hospitalization was stressed, with the result that over 90 per cent of the patients were taken care of at the General Hospital. When cases, or suspected cases, were reported to our health centers, a trained diagnostician responded to the call, often accompanied by a physiotherapist, and the patient was promptly diagnosed and either isolated at home or sent to the hospital. Through the aid of members of the medical profession, a special appropriation was obtained from the County Board of Supervisors for a full-time orthopedist, physiotherapists, and many additional diagnostic assistants to the department. A complete follow-up was established in each home in which a case of poliomyelitis had occurred, including careful muscle testing over a period of time of all remaining persons in the family. When cases were discharged from the General Hospital, the health department immediately placed all patients under careful orthopedic and physiotherapeutic régime. It is scarcely necessary with this audience to stress the need of continued follow-up of this type of cases of poliomyelitis, or those suspected of poliomyelitis. Many instances were revealed through this system of slight paralysis following minor illness, often involving a single muscle group. The presence in this district of many types of practitioners, chiropractors, and others, who specially seek to get control of cases of a chronic nature such as poliomyelitis, also makes necessary a most careful follow-up system with this disease. The response from the medical profession was especially gratifying and noteworthy. It is believed that never before has there been such splendid coöperation in regard to reporting of cases, such prompt recognition of preparalytic cases, and such a low mortality rate. Of the total of 732 cases observed during the major course of the epidemic, the death rate was only 1½ per cent, whereas heretofore it has averaged around 20 per cent.

ANALYSIS OF RESULTS

In a careful history check of 370 cases we find the following:

1. Of 235 patients who received serum in the preparalytic state in dosage from 50 to 100 cubic centimeters on the first to the third day from onset, 213, or 90 per cent, proved, on muscle check after release from the hospital, to be normal, while twenty-two, or 10 per cent, showed weakness of certain muscle groups.

2. Of one hundred paretic cases muscle-checked after release from the hospital, 53 per cent showed no extension, 35 per cent showed complete recovery, and 12 per cent showed extension to other muscle groups, but not to the extent of causing physical disability. Under the present orthopedic treatment the prognosis is regarded as favorable for complete recovery.

3. Thirty-five were found in the muscle check to come in the paralytic class. Twenty-five of these had received serum very late, that is, from the fifth to the twelfth day from appearance of paresis. Ten were either missed or refused serum. Our worst cases and the only ones in which we found "Trace or Gone" muscles were in this last group.

LOW MORTALITY RATE

We feel that the extremely low case fatality rate and the small percentage of residual paralysis may to a certain extent be credited to three factors:

1. Early diagnosis;

2. Early hospitalization and administration of pooled convalescent serum in full dosage; and

3. Proper orthopedic care while in the hospital and adequate provision for treatment after release.

INCIDENCE BY AGE

An analysis of the distribution of the cases by age groups shows that 69 per cent of the cases occurred under age nine, and 31 per cent from ten years up. The largest individual group was from five to nine years, in which period 29 per cent occurred. The second largest group shows from nine to fourteen years with 22 per cent. The third largest group is from nineteen to twenty-nine years, in which slightly over 12 per cent of the cases occurred. As in other epidemics, the disease affected the older age group (mostly females) in the latter part of the epidemic, and multiple cases were slightly more frequent. Of the 746 cases recorded up to and including October 27, 1934, there were 128 multiple cases, or a percentage of 17.15 of the total cases.

GEOGRAPHICAL INCIDENCE

In the county area the district immediately adjacent to Los Angeles City, namely, Belvedere, was the most heavily infected, with 240 cases or a proportion of nearly 1 to 300 per population. Alhambra, Redondo, Huntington Park, Glendale, and Santa Monica also showed a fairly high incidence. The far eastern portion of the county, as well as the southeastern portion, remained fairly free.

INCIDENCE AMONG NURSES

The incidence among nurses and doctors was most unusual. Over one hundred cases occurred at the General Hospital, which, so far as I know, is the first instance of such an outbreak yet recorded. A recent outbreak occurred at the Orange County Hospital where, after a poliomyelitis-free period in that county of several weeks, a nurse was stricken a few weeks ago. Thirteen more cases developed among the nursing staff within a short time. One case was extremely severe and had respiratory symptoms. No case occurred among the patients whatever. All of the nurses, with one exception, were living in the dormitory, were working very hard and thus subject to extreme fatigue. It is generally believed that the factor of severe fatigue may have a considerable influence in outbreaks among nursing assistants. No cases occurred among the regular staff of the county health department, but one case did develop in a student nurse.

IN CONCLUSION

In submitting this brief statement concerning poliomyelitis, our purpose is merely to emphasize the serious necessity for complete coördination of all control measures, and to stress the necessity of very close teamwork between health officials, social workers, school authorities, hospitals, and others in handling this disease. We believe that the formation of a coördinating body, such as was formed here and known as the Los Angeles County Poliomyelitis Board, played a very large part in contributing to the successful handling of both general control measures and making possible better care to the individual patient.

In closing, I desire to express my thanks to the members of the medical profession and to my fellow health officers who made this project a success. We submit the plan for the consideration of other counties in the State.

County Health Department, Hall of Justice.

DISCUSSION

ALFRED JAMES SCOTT, M. D. (906 California Medical Building, Los Angeles). — Doctor Pomeroy has presented very clearly and fairly the poliomyelitis situation in Los Angeles County this past summer. The credit for organization of the committee is due to Doctor Pomeroy. The work of the committee resulted in lessening the hysteria among the people by the presentation of cold facts to the newspapers, and the publication of the same, in an honest attempt to keep the public informed of the exact situation. A definite stand was taken by the committee toward the injection of serum for prophylactic purposes, whether wrongly or rightly.

From the standpoint of the diagnostician, who saw all of the early cases on the first call for help from parents or the school nurse, the diagnosis was not always clear-cut. Many mild cases undoubtedly were passed by in the first few days or weeks of the epidemic as attacks of upper respiratory tract infections or mild gastro-intestinal upset. Possibly these same types of cases were later called "abortive poliomyelitis," when they may have been infectious due to a different type of organism. It was these early cases of the abortive type that presented the greatest difficulty in diagnosis, and the diagnostician made it a rule in such cases to watch, for twenty-four or forty-eight hours, before making a positive diagnosis. Many atypical conditions were seen, and a number, when they were not poliomyelitis, may have been quarantined unnecessarily, and possibly many were diagnosed as other conditions that were "abortive poliomyelitis."

The classical case of poliomyelitis did not require much study to make a positive diagnosis, because it was so clear-cut.

Serum may have been given unnecessarily to many patients, but at least very little, if any, damage was done from the use of the human serum.

The follow-up work by the physiotherapist was very instructive. Some of the cases that were thought not poliomyelitis, but that were watched carefully, did develop some muscle weakness, and some cases that were thought definitely poliomyelitis, on the careful check-up showed no muscle weakness.

On the whole, the general poliomyelitis situation was atypical and very interesting, and such was the value of this Poliomyelitis Board, or a similar group, that it should be perpetuated by the County Supervisors, as Doctor Pomeroy has suggested, for some similar condition in the future.

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CHARLES LEROY LOWMAN, M. D. (2400 South Flower Street, Los Angeles).—I am especially appreciative of Doctor Pomeroy's comment on the value of convalescent serum, and wish to acknowledge the very fine piece of work done by Doctor Stone in the Los Angeles County Laboratory. He ran seven-day sterility tests on 162,000 cubic centimeters of blood supplied by the Orthopedic Hospital, making 62,000 cubic centimeters of serum, with 100 per cent sterile results.

I am glad also that Doctor Pomeroy has emphasized the importance of beginning orthopedic attention in the hospital during the acute stage, and continuing it without interruption afterward.

The fact that this is the first epidemic of poliomyelitis in which trained physiotherapists were assigned to making muscle checks, is a source of satisfaction to those of us on the Poliomyelitis Advisory Board, and is, I think, a marked step in advance. Medical attendants who are not accustomed to this work will usually overlook deep-seated but very impor-

tant muscles; or because extremity muscles may seem fairly active they cannot estimate minor degrees of imbalance. It is just these slight degrees of difference that may allow later development of severe deformity, especially in the spine. As 70 per cent of children have some postural fault anyway, the added strain of a serious infectious attack which involves the motor system, even in mild cases, may be the last straw which upsets compensation and starts the insidious course leading, in a few years, to deformation.

I am glad that rest, and more rest has been emphasized in order to offset the vicious teaching of some cultists, who openly recommend getting these patients up early, and starting activity and weight-bearing before the neuromuscular mechanism is ready for it.

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R. W. MEALS, M. D. (6777 Hollywood Boulevard, Hollywood).—This community, and others, can avoid costly and embarrassing situations by organizing permanent boards to meet epidemic emergencies. In this same connection it is hoped that ultimately each large population center will establish serum depots, where all antisera may be had for emergency use by every reputable agency or individual.

Concerning the question of closing the schools during an epidemic of poliomyelitis, it might be well to elucidate that the board regarded the unknown, adult, "healthy carrier" as the greatest factor in the spread of the disease, and that the children were safer under observation among their habitual associates than they would have been out of school, in many instances without restraint and increasing their contacts. Parents were advised, however, to keep children out of theaters and crowds in order to avoid possible and unnecessary exposure.

The statistical detail of Doctor Pomeroy's paper brings up points that will bear emphasis. The number of cases in rural districts having equaled those in urban communities shows a relatively higher incidence among the former, at least more infections from fewer contacts in the sparsely populated areas. This confirms the hypothesis that residents of cities enjoy a higher immunity than their rural neighbors, due to more intimate contact and previous unrecognized, or subclinical, infection.

The old theory of single infections in a family was conclusively exploded, and when data are available on the recent epidemic there will be a still greater number of instances of multiple infection in the home. Recognition of the abortive and mildly paretic cases is the answer.

The increased number of preparalytic cases reported is evidence of an alert and coöperative profession, and more accurate diagnoses. Muscle checks following these infections have shown a very high percentage of very minute pareses, thus establishing the diagnoses. Similar tests following minor illnesses have shown comparable findings, thus confirming the belief that many mild respiratory or gastro-intestinal infections are unrecognized poliomyelitis, or infections that at least exhibit neurotrophic toxins.

Instances of second attacks are rare, but do exist. This is evidence of an inadequate initial immunologic response, and neutralization tests done by Howitt* show a higher anti-viral titer of the serum, of the spontaneously recovered patients, than of those severely paralyzed or passively immunized. The latter are more liable to reinfection.

The value of early administration of serum was forcefully brought out. The complete recovery of all the preparalytics, the 50 and 41 per cent recoveries among those treated, respectively, on the first and second day of paralysis, and the 27 per cent of recoveries among the untreated, are indisputable figures. Untreated control groups are not permitted at the County Hospital, but among the outside cases there are always a large number who refuse serum and thereby furnish a control such as that mentioned. The 1930 epidemic also showed the value of serum therapy when it is recalled that the mortality rate among hospitalized, serum-treated cases, was 3.1 per cent as against 7.6 per cent for the county at large, including the untreated.

Prophylactic serum was judiciously omitted from the paper. The Board took no stand on the question, because of the inconclusive experimental data available.

The figures on "bulbar" deaths and those from respiratory musculature paralysis, bring up the question of the Drinker respirator. Our experience at the County Hospital has been that medullary involvement results in "cardiac death," from vagus inhibition, in 100 per cent of cases. Some recovered respirator cases have had cranial nerve palsies representing the encephalitic form of the disease, but their respiratory difficulty has been phrenic (cervical) or intercostal (thoracic) paralysis, and not truly "bulbar" (medullary). The conception that the respirator saves cases with bulbar paralysis is erroneous.

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JOHN C. RUDDOCK, M. D. (1930 Wilshire Boulevard, Los Angeles).—Doctor Pomeroy must be complimented on his very thorough résumé of the situation in Los Angeles County during the recent poliomyelitis epidemic, which began early in the spring of 1934, and lasted throughout the summer. The epidemic was prophesied by Doctor Pomeroy's department in a careful analysis of its records, which began to show an increasing incidence in poliomyelitis cases.

From a public health standpoint, it was necessary to find ways and means of combating this threatened epidemic. It was necessary that the public be not alarmed, and also that complete coördination be had between the executive heads of all local health departments, as well as harmonious arrangement with the practicing physicians, so as to be on the lookout and suspect cases of poliomyelitis.

Los Angeles County has a peculiar set-up, inasmuch as there is apt to be conflict of authority in regard to combating a major epidemic. There is a County Health Department, which has charge of all the rural areas of Los Angeles County, as well as certain municipalities in that county. In addition to this, there are the health officers of the city of Los Angeles, city of Long Beach, city of Pasadena, and city of Vernon. In addition, we have the School Health Department, which overlaps the work of all these various health department units. The Los Angeles General Hospital receives contagious cases from each and all of these various health units; and the treatment is instituted by the staff of the General Hospital rather than the health department.

Early in the epidemic it was prophesied that this epidemic would be a severe one and that it was essential that some unit might function that would coördinate all these various factors. Such a unit was formed, as described by Doctor Pomeroy, and met weekly throughout the period of the epidemic. Its influence was far-reaching, in that it carried on an intensive educational program among the physicians of the county; it adjusted and regulated the various preventive measures as adopted by the local health departments, all of which acted as a unit, and not independently; it allayed the fears of the public and disseminated accurate information throughout the press; it was serviceable in obtaining proper hospitalization and follow-up work on various cases reported, and also instrumental in arranging for the obtaining of muscle checks by competent physiotherapists, following the epidemic.

Such a coördinating unit is essential in large centers of population where there are multiple health officials whose duty it is to protect the public in case of major epidemics. Where each and every health unit is operating and acting independently of every other one, much conflict may occur in the attempt to gain one end, namely, control of the epidemic.

The fear of poliomyelitis becomes very great among the lay public when knowledge is disseminated by

* Howitt, Beatrice: J. Infec. Dis., 51:565 (November and December), 1932.

rumor. This was evident in the early days of our epidemic, when several hundred persons applied daily to the Los Angeles General Hospital for admission for themselves or their children. The hospital was forced to accept these cases until they were proved not to be poliomyelitis, and hospitalization became a major problem within a few days. With the establishment of this Poliomyelitis Board, and a full explanation to the public concerning the situation, stressing precautional measures and prompt adequate medical care, this acute hospital situation was relieved.

I cannot recommend too forcibly the establishment of a coördinating unit, carefully selected, to arrange policies, to prevent and control major epidemics, in every large center of population where multiple health units are in existence.

MORBIDITY INCIDENT TO PREGNANCY*

By EMIL J. KRAHULIK, M.D.
Los Angeles

IT seems quite natural that one country, one hospital, one clinic, or even one individual should desire to compare results with another, for in this way we are inspired to improve our condition. In the United States, at the present time our attention is focused on maternal mortality. Comparative tables give us the unenviable position of having one of the highest maternal death rates in the world. It is exceedingly urgent that all forces be concentrated upon reducing this embarrassing situation.

IMPORTANCE OF MORBIDITY INCIDENTAL TO PREGNANCY

There is another consideration which is even more important than fatalities, and that deals with the morbidity incidental to pregnancy. When we concern ourselves with mortality alone, we take into account only our complete failures. For some years various reports have made comparisons of the respective morbidity, as well as mortality. While there are some minor differences in the evaluation of morbidity, usually it is defined as an elevation of temperature to 100.4 degrees Fahrenheit for two successive days. Although this may be the only available yardstick, capable of mathematical interpretation, it is very inadequate and misleading. A febrile puerperium may leave no after-effects whatsoever, while a patient without any elevation of temperature may have suffered damage which will never be corrected. In speaking of morbidity we cannot be content with thinking only of a febrile puerperium, but we must include also any damage or symptom which may produce incapacity or annoyance. Only recently a patient asked me if it was safe to have another baby, inasmuch as she has had so much pain in the coccyx since the first baby came that she can hardly remain seated. If we examined our patients six months or a year postpartum, we would discover a number of items that might be deserving of tabulation, and would really be an evaluation of our unfavorable results. The more common ones would be lassitude, headache, pain in the abdomen, backache, urinary sphincter incompetence, anemia, lacerations, retroversion, and subinvolution. It does not follow that all of these are the result of faulty obstetrics; but when such disabilities occur as a result of pregnancy or are aggravated by it, it is our responsibility to reduce the incidence.

Perhaps these items sound too insignificant, but nevertheless they account for much unhappiness and suffering among women, not to mention the financial outlay for treatments, hypodermics, drugs, and even operations. It is too well known that many of these symptoms are never completely eradicated in spite of all treatments and operations. Furthermore, a gynecological patient sometimes dies following operation. Might not this be considered a remote obstetrical death, one emanating from a form of maternal morbidity?

While these items have not been included in the various tabulations, I do not mean to infer that they have been totally neglected. On the contrary, much has been done. The literature is filled with considerations of the numerous obstetrical problems, with suggestions for improving the end-results. Prenatal care has brought the focus of attention upon various infirmities, the correction of which improves the condition of the patient. During the past twenty-five years, students and internes have received abundant instruction in obstetrical management and obstetric operations, so that a larger number of women are attended by men with more mature experience in obstetrics. Hospitals also have been moved to action. Obstetrical departments have been removed from some obscure corner of a medical floor to a dignified station in the hospital. For the after-care of a new mother some items have been emphasized; but there is still a definite tendency to drop the patient as soon as she has left the hospital. More postpartum attention and instruction are necessary.

VALUE OF PRENATAL CARE

The beneficial influences of prenatal care have been felt in the management of such complications as heart disease, tuberculosis, and toxemia, by starting treatment before they become emergencies and before too much damage has taken place. In toxemia, especially, have we noticed the influence. By ordering a patient to bed on a milk diet as soon as any hypertension appears, we may spare her a life of invalidism from chronic nephritis. If treatment is begun with the first signs, these may be entirely erased, but if we wait for a higher blood pressure and for albuminuria, response to treatment will be disappointing. Too often treatment is haphazard until enough damage has been done, so that the disease becomes uncontrollable.

Blood Counts.—A blood count is made on every surgical patient and the operation postponed if it is not satisfactory. Yet very few obstetrical patients have blood counts at any time. Many patients will show an anemia beyond that expected

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* Chairman's address, Obstetrics and Gynecology Section of the California Medical Association, at the sixty-fourth annual session, Yosemite, May 13-16, 1935.